JCB
THE JOURNAL OF CELL BIOLOGY
VOL. 203, NO. 1, OCTOBER 14, 2013

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- MAD2L2 helps mitotic cells take it slow
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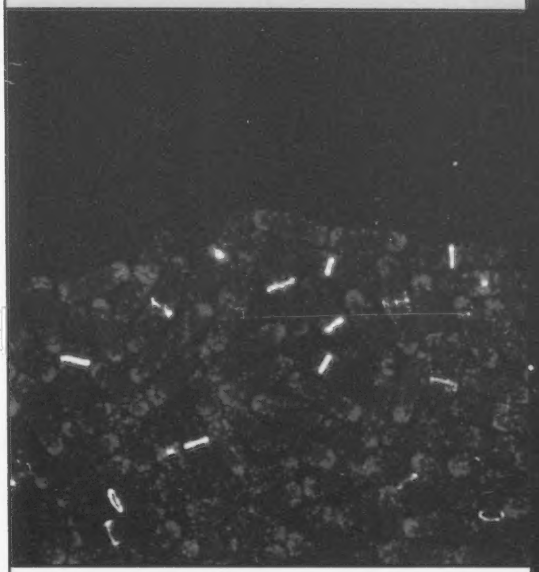

On the cover

Tetrad fluorescence microscopy shows a colony of wild-type fission yeast labeled for actin (green) and myosin regulatory light chain (red). Coffman et al. describe how two actin-nucleating formin proteins cooperate to assemble the actomyosin contractile ring during cytokinesis.
Image © 2013 Coffman et al.
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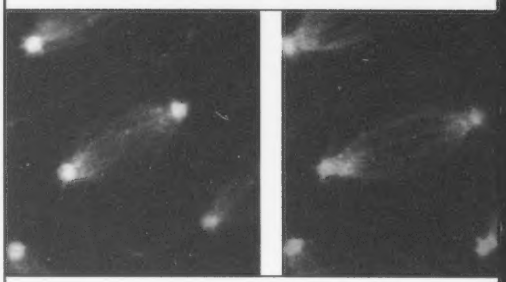

In *Drosophila* embryos, the mitotic spindle (red) elongates between metaphase (left) and the end of anaphase (right). Wang et al. reveal that this elongation is induced by the microtubule minus end–capping protein Patronin, which counteracts the depolymerizing kinesin KLP10A (green) at spindle poles.
Image © 2013 Wang et al.
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On the cover

Schulze et al. reveal that the GTPase Dynamin 2 promotes the breakdown of lipid droplets by aiding the regeneration of lysosomes from autolysosomal compartments. In a hepatocyte lacking Dynamin 2, a membrane tubule protruding from a lipid droplet–containing autolysosome is abnormally long because it cannot be fragmented into new protolysosomes.
Image © 2013 Schulze et al.
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315 Lipid droplet breakdown requires Dynamin 2 for vesiculation of autolysosomal tubules in hepatocytes
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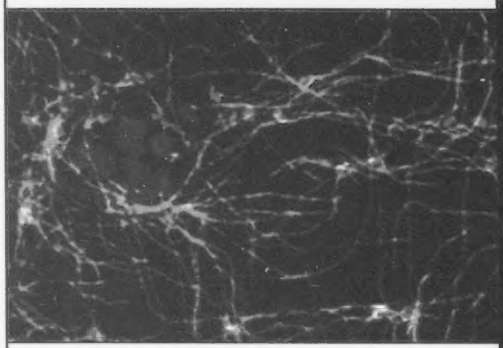

Oddoux et al. report that the grid-like network formed by skeletal muscle microtubules (green) is composed of dynamic microtubules nucleated from Golgi complex elements (red). Image © 2013 Oddoux et al.
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● FRETting over kinesin activity
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437 Membrane domain organization of myelinated axons requires βII spectrin
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445 A biosensor of local kinesin activity reveals roles of PKC and EB1 in KIF17 activation
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As depicted in this 3D reconstruction of a *Tetrahymena thermophila* cell, secretory granules known as mucocysts (green) move through the cytoplasm to dock at the plasma membrane. Colored lines show the trajectories of the mobile mucocyst pool. Briguglio et al. reveal that the sortilin family of lysosomal sorting receptors deliver non-aggregated cargo proteins to the granules.
Image © 2013 Briguglio et al., and prepared with the help of Christine Labno.
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457 The histone demethylase LSD1/KDM1A promotes the DNA damage response
Nima Mosammaparast, Haeyoung Kim, Benoit Laurent, Yu Zhao, Hui Jun Lim, Mona C. Majid, Sebastian Dango, Yuying Luo, Kristina Hempel, Mathew E. Sowa, Steven P. Gygi, Hanno Steen, J. Wade Harper, Bruce Yankner, and Yang Shi

471 A novel chromatin tether domain controls topoisomerase IIα dynamics and mitotic chromosome formation
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487 Opposing actions of septins and Sticky on Anillin promote the transition from contractile to midbody ring
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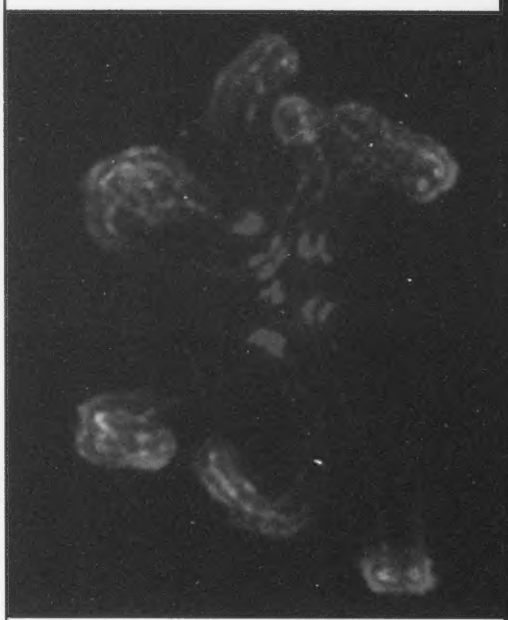
505 The midbody ring scaffolds the abscission machinery in the absence of midbody microtubules
Rebecca A. Green, Jonathan R. Mayers, Shaohe Wang, Lindsay Lewellyn, Arshad Desai, Anjon Audhya, and Karen Oegema

521 Synaptic NMDA receptor stimulation activates PP1 by inhibiting its phosphorylation by Cdk5
Hailong Hou, Lu Sun, Benjamin A. Siddoway, Ronald S. Petralia, Hongtian Yang, Hua Gu, Angus C. Nairn and Houhui Xia

537 Lysosomal sorting receptors are essential for secretory granule biogenesis in *Tetrahymena*
Joseph S. Briguglio, Santosh Kumar, and Aaron P. Turkewitz



Lane et al. identify a chromatin tether domain in topoisomerase IIα that mediates the enzyme's interaction with DNA and histone H3 and facilitates the formation of mitotic chromosomes. On the large mitotic chromosomes of *M. muntjac* cells, topoisomerase IIα (green) shows little overlap with histone H3 phosphorylated on serine 28 (red), a modification that inhibits the interaction between the two proteins.
Image © 2013 Lane et al.
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585 An array of nuclear microtubules reorganizes the budding yeast nucleus during quiescence
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595 Phosphorylation of the TOR ATP binding domain by AGC kinase constitutes a novel mode of TOR inhibition
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605 The association of microtubules with tight junctions is promoted by cingulin phosphorylation by AMPK
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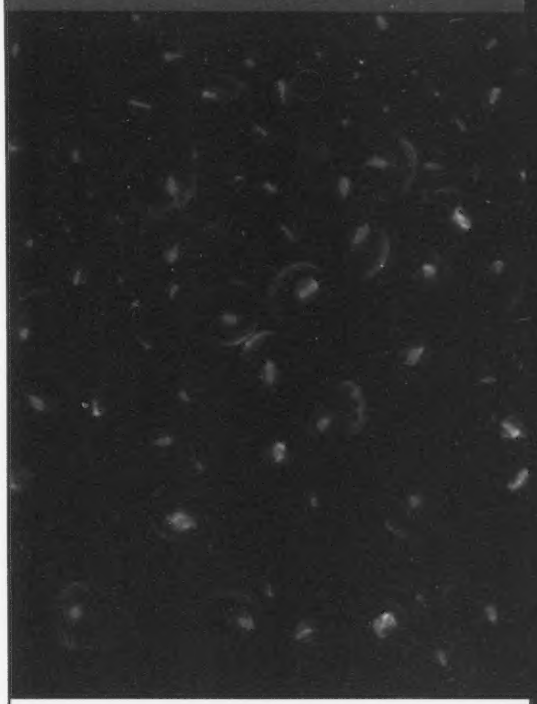

On the cover

Laporte et al. reveal that quiescent budding yeast form an array of microtubules (green) inside their nuclei (delineated by the nucleoporin Nup2, red). These microtubules reorganize the nucleus and promote cell survival and re-entry into the cell cycle. Yeast cell walls are labeled blue.
Image © 2013 Laporte et al.
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629 An internal ligand-bound, metastable state of a leukocyte integrin, $\alpha_X\beta_2$
Mehmet Sen, Koichi Yuki, and Timothy A. Springer

643 Dysbindin is a potent inducer of RhoA–SRF-mediated cardiomyocyte hypertrophy
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657 Local caspase activation interacts with Slit-Robo signaling to restrict axonal arborization
Douglas S. Campbell and Hitoshi Okamoto

673 Lamellipodin and the Scar/WAVE complex cooperate to promote cell migration in vivo
Ah-Lai Law, Anne Vehlow, Maria Kotini, Lauren Dodgson, Daniel Soong, Eric Theveneau, Cristian Bodo, Eleanor Taylor, Christel Navarro, Upamali Perera, Magdalene Michael, Graham A. Dunn, Daimark Bennett, Roberto Mayor, and Matthias Krause

691 Wound healing revised: A novel reepithelialization mechanism revealed by in vitro and in silico models
Kai Safferling, Thomas Sütterlin, Kathi Westphal, Claudia Ernst, Kai Breuhahn, Merlin James, Dirk Jäger, Niels Halama, and Niels Grabe

Safferling et al. analyze the processes of cell proliferation, differentiation, and migration that contribute to epidermal wound healing and use their data to construct a computational model (left) that recapitulates the healing of organotypic skin cultures (right). Nuclei are labeled blue. Some of the epidermal cells are labeled with a green cell tracker.
Image © 2013 Safferling et al.
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712 ● Shelterin protein keeps telomeres on edge
● Actin-capping protein lets epithelial cells take the pressure
● Sip1 liberates neural crest cells
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737 The RNA-binding protein Fus directs translation of localized mRNAs in APC-RNP granules
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747 Loss of centrioles causes chromosomal instability in vertebrate somatic cells
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757 Autophagy proteins stabilize pathogen-containing phagosomes for prolonged MHC II antigen processing
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785 CP110 exhibits novel regulatory activities during centriole assembly in *Drosophila*
Anna Franz, Hélio Roque, Saroj Saurya, Jeroen Dobbelaere, and Jordan W. Raff

801 Multiple mechanisms determine ER network morphology during the cell cycle in *Xenopus* egg extracts
Songyu Wang, Fabian B. Romano, Christine M. Field, Tim J. Mitchison, and Tom A. Rapoport

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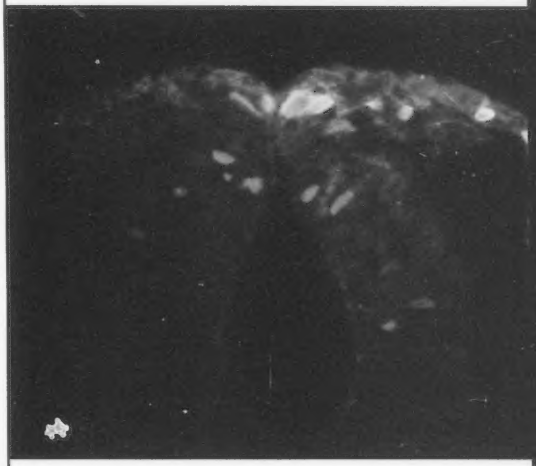

On the cover

A transverse section through the midbrain of a chick embryo shows the effects of electroporation on the left side with a control morpholino and on the right side with a morpholino that blocks translation of the transcription factor Sip1. E-cadherin (red) is up-regulated in the absence of Sip1, preventing neural crest cells from detaching from each other and completing their epithelial-to-mesenchymal transition. Both morpholinos are labeled green. Image © 2013 Rogers et al.
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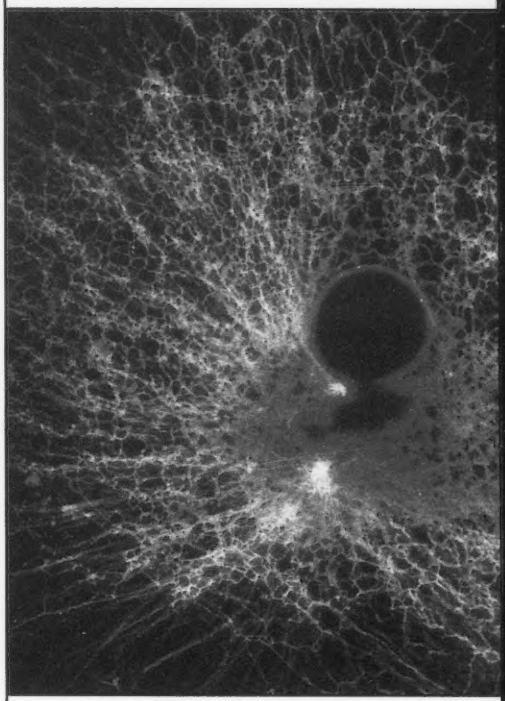
815 FSGS3/CD2AP is a barbed-end capping protein that stabilizes actin and strengthens adherens junctions
Vivian W. Tang and William M. Brieher

835 Sip1 mediates an E-cadherin-to-N-cadherin switch during cranial neural crest EMT
Crystal D. Rogers, Ankur Saxena, and Marianne E. Bronner

849 Liprin-α/SYD-2 determines the size of dense projections in presynaptic active zones in *C. elegans*
Maike Kittelmann, Jan Hegermann, Alexandr Goncharov, Hidenori Taru, Mark H. Ellisman, Janet E. Richmond, Yishi Jin, and Stefan Eimer



The endoplasmic reticulum (green) forms a tubular network in interphase *Xenopus* egg extract. Wang et al. find that, over the course of the cell cycle, ER morphology is controlled by the GTPase Atlastin and by the interaction of ER membranes with dynein and the ends of growing microtubules (red).
Image © 2013 Wang et al.
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866 ● Senescent cells have a case of the SADS
● T cells JAK up integrin activity
● p120 CLASPs microtubules to junctions
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867 ● Arp2/3-deficient cells share their problems
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875 Phase transitions and size scaling of membrane-less organelles
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883 Spindle assembly checkpoint robustness requires Tpr-mediated regulation of Mad1/Mad2 proteostasis
Nina Schweizer, Cristina Ferrás, David M. Kern, Elsa Logarinho, Iain M. Cheeseman, and Helder Maiato

895 Novel septin 9 repeat motifs altered in neuralgic amyotrophy bind and bundle microtubules
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907 Loss of Arp2/3 induces an NF-κB–dependent, nonautonomous effect on chemotactic signaling
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917 Autophagy and metacaspase determine the mode of cell death in plants
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929 Higher-order unfolding of satellite heterochromatin is a consistent and early event in cell senescence
Eric C. Swanson, Benjamin Manning, Hong Zhang, and Jeanne B. Lawrence

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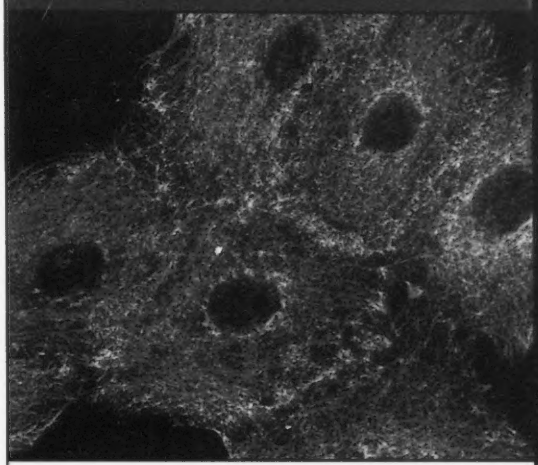

On the cover

In primary mouse keratinocytes, microtubules (green) decorated with the plus end–tracking protein CLASP2 (red) are targeted to intercellular contacts mediated by E-cadherin (blue). Shahbazi et al. demonstrate that CLASP2 interacts with adherens junctions via the cadherin-binding protein p120-catenin, controlling both microtubule dynamics and cell–cell adhesion. Image © 2013 Shahbazi et al.
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943 Arrayed BUB recruitment modules in the kinetochore scaffold KNL1 promote accurate chromosome segregation
Mathijs Vleugel, Eelco Tromer, Manja Omerzu, Vincent Groenewold, Wilco Nijenhuis, Berend Snel, and Geert J.P.L. Kops

957 KNL1 facilitates phosphorylation of outer kinetochore proteins by promoting Aurora B kinase activity
Gina V. Caldas, Keith F. DeLuca, and Jennifer G. DeLuca

971 In vitro reconstitution of an mRNA-transport complex reveals mechanisms of assembly and motor activation
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985 Acyl-CoA synthetase 3 promotes lipid droplet biogenesis in ER microdomains
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1003 JAK tyrosine kinases promote hierarchical activation of Rho and Rap modules of integrin activation
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1021 The N terminus of SKAP55 enables T cell adhesion to TCR and integrin ligands via distinct mechanisms
Michael J. Ophir, Beiyun C. Liu, and Stephen C. Bunnell

1043 CLASP2 interacts with p120-catenin and governs microtubule dynamics at adherens junctions
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1063 Endosomal WASH and exocyst complexes control exocytosis of MT1-MMP at invadopodia
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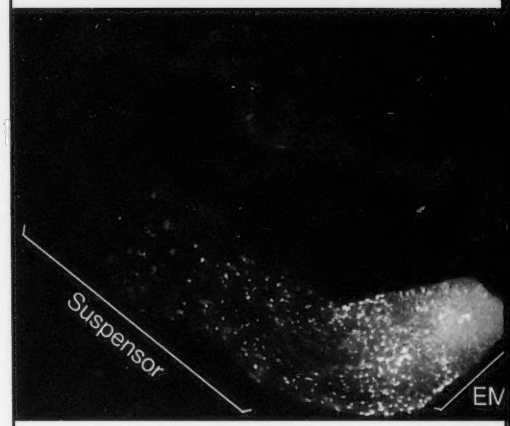
1081 Filamentous morphology of bacteria delays the timing of phagosome morphogenesis in macrophages
Akriti Prashar, Sonam Bhatia, Darren Gigliozzi, Tonya Martin, Carla Duncan, Cyril Guyard, and Mauricio R. Terebiznik



Early embryos of the Norway spruce, *Picea abies*, contain a proliferating embryonal mass (EM) and a terminally differentiated suspensor. Viable cells are stained with fluorescein diacetate (green). Nuclei are labeled blue, and membranes are dyed red. Minina et al. reveal that, during development, the suspensor cells are eliminated via an autophagic process activated by the proteolytic metacaspase mcII-Pa.
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See page 917.